



# Roanoke Valley Astronomical Society

Amateur Astronomy News and Views  
In Southwestern Virginia



Volume 38—Number 2

February 2021

*RVAS January Meeting Report*

## Uranus, the "Star" of January

By Mike Hutkin, RVAS Secretary

President **John Goss** opened the January virtual pre-meeting chat session at 7:00 pm and along with Treasurer and Membership Chairperson **Frank Baratta**, took the opportunity, as people signed in, to welcome guests and members. This included **Joe Sgroi**, guest of **Frank Baratta**. Welcome, Joe.



*Page 1 of Zoom attendees - Zoom photo*

Following his introduction, Joe shared some of his background information and that he had recently ordered a Celestron Nexstar 8SE and was eagerly awaiting its arrival. More experienced members offered Joe some insight on learning how to use his equipment once it arrives as well as the various "apps" he might consider adding to his toolkit. **Will Krause** noted that he too had recently purchased that same telescope and was in the "getting familiar" phase. It sounded like Will and Joe will soon be comparing notes.



*Page 2 of Zoom attendees - Zoom photo*

This pre-meeting period was also a good time for **Frank Baratta** to note that our meetings are a coast-to-coast affair with **Paul Caffrey** in California, **Joel Shelton** in North Carolina, and the rest of us in Virginia. Frank also gave a warm welcome back to **Bob Crawford**, whom we haven't seen in some time.

Looking around the virtual room one notices that the Zoom format lets some members get creative with their screen background. We see a variety of things such as scenic mountain views, distant galaxies, nebulae, and other astronomy-related themes.

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*Editor/  
Webmaster Dave  
Thomas (top) sits  
among the stars and  
Will Krause  
contemplates the  
Sierra Nevada  
mountains -  
Zoom photo*



Executive Committee members and thanked them for their leadership. While on this topic of participation, **President Goss** noted that **Executive Committee Member at Large Ray Bradley** intends to not seek re-election, but will still be an important part of the club activities. That said, the position of Member at Large is open for someone to fill, as is the Astronomy Day coordinator. These are both excellent opportunities for a club member to step forward and help with the continued operation of the RVAS. With the voting for new board members performed in June and the installation in July, now is the time to reach out to any of the Executive Committee members and indicate your willingness to help or ask questions about potential roles.

Closing out the introductions, **Frank Baratta** gave a shout out to **Mark England** who is our newest and our 80<sup>th</sup> member. Welcome, Mark.



*Mark England is welcomed to RVAS - Zoom photo*

Starting the regular meeting at 7:30 pm, **President John Goss** asked the audience if anyone had received any new equipment in their Christmas stockings. We learned that **Eric Walter** purchased a Pier-tech 12.5 x 20-foot observatory building as well as an Astro-physics 130 GTX scope. **David Thaler** ordered an iOptron Telescope on the cube mount that is on backorder. These sound like great additions and we look forward to seeing their acquisitions put to good use. **Ray Bradley** didn't have any new equipment but did proudly show his recently acquired Astronomical League hat. Wear it proudly Ray.

John continued his welcome by reminding attendees that the RVAS is a place for all astronomy skill levels and interests and then recognized the Execu-

(Meeting Continued on page 3)

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to the pursuit of observational and photographic astronomical activities. **Meetings are held at 7:30 p.m. on the third Monday of each month. See calendar on last page of newsletter for location. Meetings are open to the public.** Observing sessions are held one or two weekends a month at a dark-sky site. Yearly dues are: Individual, \$20.00; Senior Individual, \$18.00; Family, \$25.00; Senior Family, \$22.00; Student, \$10.00. Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS or its editor.

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RVAS web page: <http://rvasclub.org>

(Meeting Continued from page 2)

**President Goss** continued by noting that the RVAS has a very active media footprint with our newsletter, Facebook page, and until recently our Yahoo group for sharing information. With the recent termination of the group feature by Yahoo, the Executive Committee is actively working to select a replacement. The RVAS Yahoo group has been a handy way to share information, post questions, and receive answers and a new platform is expected to be announced soon.

It was now time for observing reports and **President Goss** asked if there were any more reports related to the December Jupiter/Saturn conjunction. **Secretary Mike Hutkin** reported on his experience on the night of December 22 when he had invited a few neighbors to come with him to a relatively high and dark area in his neighborhood. As a novice to astronomy, he was apprehensive about whether he would have a successful observing session or whether it would be a disappointing failure. To his joy, he was able to successfully show his friends the conjunction event and answer a myriad of questions. He was further surprised to see many more people arrive and was able to share the experience with them as well. One of the things we all look forward to in the post-COVID era is to be together again for observing sessions.

Regarding observing, **President Goss** offered some good advice. He explained that while the bright moon is usually a detriment to observing the night sky, sometimes it can be a friend. The added light from a bright moon or even a moon that has risen before sundown can be a good opportunity to practice using your equipment. Good advice.

While unable to attend the meeting, **President Goss** noted that **Harry Montoro** had reported observing the thin crescent moon when it was only 40 hours old. The requisite clear skies had prevailed, and Harry was able to get some great pictures.

**Immediate Past President Michael Martin** finished the Astronomical League's Constellation Hunter Observing Program for the Northern skies. Working in the wee hours of a recent morning right before the clouds rolled in, he was able to check off the last items on his list. Congratulations Michael.

It is important to note that there are many Astronomical League programs for us to pursue, with each offering a different type of challenge for the amateur astronomer.

**Frank Baratta** was then called upon for our "What's Up" sky review for February 2021, high



**Michael Martin** reports on the Constellation Hunter Northern Star program - Zoom photo

lighting the near and deep-sky objects. For a summary of Frank's program, see this issue's "What's Up Highlights," and the entire PowerPoint by clicking [here](#).

Following Frank's "What's Up" presentation, **President Goss** kicked off tonight's feature program which focused on the planet Uranus. The elusive planet is far away, very dim, difficult to spot, and even more difficult to image. However, this month we have an assistant. Mars, which is easy to see with the naked eye, is passing by Uranus. Find Mars and you can then find Uranus.

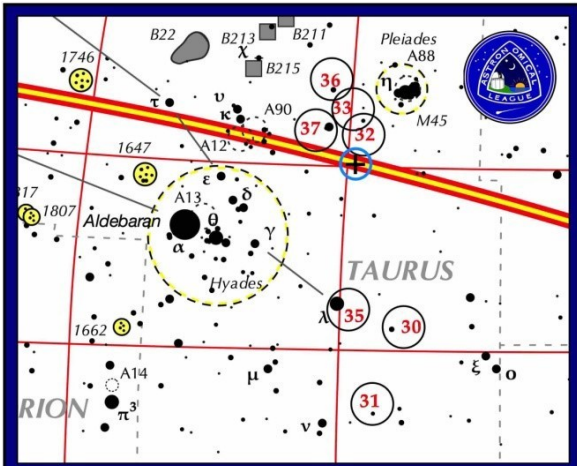
Some background information was in order and John started with some history regarding observations made in 1690 when John Flamsteed identified what he thought was a star in the constellation Taurus. He named that star 34 Tauri as part of his numbering scheme. But the next year 34 Tauri wasn't in the same place. This meant it wasn't a star but rather a dim planet or some other object, and the designation he had given it was removed, leaving 34 absent in the sequence.

It wasn't until March 13, 1781, when William Herschel recognized that the object he was seeing in Taurus wasn't a star. While not sure at first what he was seeing, further consideration led him to recognize it as a planet, which he named Uranus.

John went on to explain that with Uranus being 19.8 AU from the sun, it is very dim and very small in an eyepiece with a typical field of view (FOV). This dimness is not only because of the size and distance but also because of the inverse square law that applies to light traveling to and being

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(Meeting Continued from page 3)



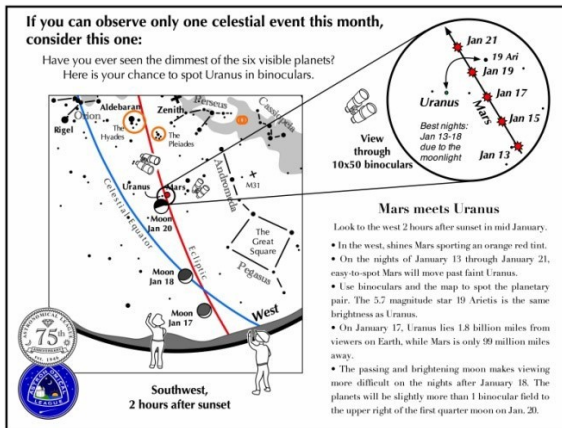
If you look carefully on a star chart depicting the constellation Taurus, you will find stars with the Flamsteed numbers ... 30, 31, 32, 33, 35, 36 ... Why is "34" not found?

- A. The star that John Flamsteed designated "34 Tauri" went supernova shortly after he assigned it that number.
- B. It was simply an error of omission.
- C. When Flamsteed numbered the stars in Taurus in 1690, he assigned Uranus to be "34 Tauri," thinking it was a star, not an undiscovered planet.

John Goss explains the discovery of Uranus - Zoom photo

reflected from celestial objects. Using this law we find that Uranus receives 1/324 (0.003086) the intensity of the sunlight we see on earth.

So, with it being so small and so dim, how does one find Uranus? John provided us some valuable insight into how one would go about this using a detailed chart with step-by-step instructions. Hopefully, we will hear about some successful observations in our February observing reports. Good luck.



John Goss explains how to find Uranus - Zoom photo

President Goss then used his monthly quiz format to get us thinking about Uranus and Mars. We learned that Mars is the closest planet to earth tonight and that it will soon not be in that position again for 2 years. We also learned that while many planetary moons are named after Greek and Roman Gods and Goddesses, the primary moons of Uranus are named after characters in the works of William Shakespeare.

Now for some images. John had challenged some of our astrophotography capable members to image Uranus and share their results with us tonight. Four took the challenge.

He then turned the floor over to Michael Martin who spoke about his progress on the Astronomical Leagues Solar System observing program, which included the observation of Uranus in the early morning hours of September 18, 2019. As an experienced observer, and to satisfy the AL program requirements, Michael kept accurate records of his Uranus observation, including noting that "the disk of Uranus was easier to make out at 200x and 400x than Neptune. Uranus appeared as a soft bluish-white disc". He added that while you don't see much, the color was "incredible" and it was much different from observing a star.



Michael Martin's Uranus image - Zoom photo

Fast-forward to 2021 and Michael took on John's challenge to image Uranus, which he had never done before. Using his 8-inch Dobsonian, a DSLR camera, and a 3X Barlow lens, Michael captured video and did the processing with AutoStakkert to produce a great image. He was surprised to see the softness and the color of the planet.

(Meeting Continued from page 4)

**Paul Caffrey** was next on the program to share his work imaging Uranus. He described the equipment he used, which included his 8 inch Schmidt-Cassegrain scope equipped with 2 cameras. He did not use a Barlow lens for his work and related the challenges of collecting video frames from such a dim object. He explained how he went about using AutoStakkert software to process the image and showed the video he took and the final processed result. Great work Paul.



*Paul Caffrey's Uranus image - Zoom photo*

Next was **John Wenskovitch** who had also volunteered to image Uranus. New to astrophotography he began with a DSLR camera equipped with a large zoom lens. On January 10 he was able to catch Mars and Uranus in the same image. He then went to his big guns and took his 12.5 inch Dob with 6mm eyepiece and captured 25 minutes of video at 15 frames per second on his smartphone, did some basic processing with AutoStakkert, and produced this image. Nice job John.

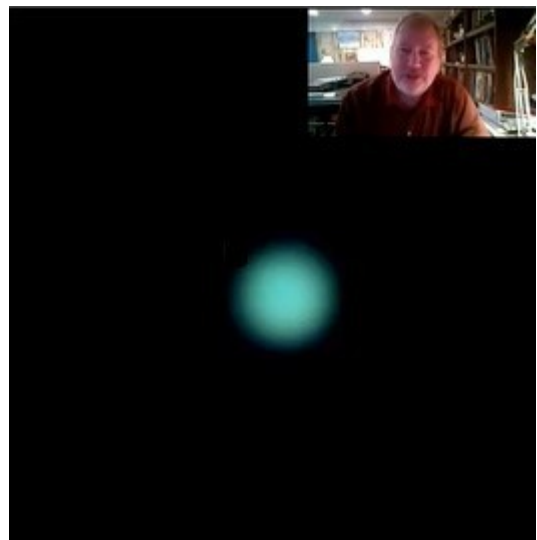


*John Wenskovitch's Uranus image - Zoom photo*

Last but not least of the Uranus imagers was **Michael Good** operating out of his own Poages Mill Observatory.

Michael began by showing us his work from 2018 imaging Uranus and its major moons before moving to the work he did on January 10, 2021. His impressive work with the moons of Uranus was aided by an interesting Sky and Telescope program that, when given a date, shows the position of the major moons.

Michael then shared his image showing the moons identified with their names. On January 10 of this



*Michael Good's Uranus image - Zoom photo*

*(Click on above image to download Power Point presentation)*

year, he took up the challenge to observe Uranus and captured 1619 images. These were processed in AutoStakkert, Registax, and Topaz for sharpening to further refine the image. The result was impressive.

President Goss then thanked all those that took up his challenge to image Uranus and a virtual round of applause was offered to our presenters.

In February we look forward to hearing from **Ray Bradley** on the status of the NASA Perseverance Rover, which is scheduled to land on Mars on February 18.

With no other business, the meeting was adjourned at 9:00 pm.

# RVAS EXECUTIVE COMMITTEE MEETING

## January 21, 2021

The RVAS Executive Committee met at 7:30 pm on January 21, 2021, via Zoom, and was attended by Frank Baratta, Dan Chrisman, John Goss, Mike Hutkin, and Michael Martin.

President Goss welcomed the attendees, thanked all for participating, and presented the meeting agenda.

Two more telescopes have been offered to RVAS. These will be retrieved and stored with other equipment owned by RVAS, the inventory will be updated, and options will be explored beyond continued storage.

The Yahoo group function was shut down on December 15, 2020. Since it was used by members for club communications, a replacement is being evaluated and will soon be offered. It is expected that this will be Google Groups.

Regarding programs, the EC discussed options for programs that would be a full meeting presentation as well as possible short topics to combine into one complete program. A list of possibilities was prepared and will be laid out for presentation at upcoming meetings.

As required for filing for tax-exempt status, the wording for an appropriate RVAS *dissolution clause* to be amended into the Bylaws had been previously prepared and was reviewed. A revision was suggested during the review and an amendment to the Bylaws to add the revised clause was approved by the Committee, along with expending the required \$600 IRS filing fee. A Bylaws amendment process will be undertaken whereby the membership will be afforded the opportunity to endorse or reject the action of the Committee.

The last item discussed was EC positions. The current Member-at-Large is stepping away from the EC position after 5 years of service. The current Vice-President is completing 2 years on the EC, which is the position service limit. The President will be forming a nominating committee to prepare a slate of officers for all elected EC positions, as required by the RVAS by-laws.

The meeting was adjourned at 8:25 pm.

## Welcome Mat

The Society bids a warm and cordial welcome to Joe Sgroi, of Roanoke County, who joined with a Senior membership last month, becoming our 81<sup>st</sup> member! Joe's a Baltimore native who grew up on the East side, a fan of the Orioles and the Colts. At 18 he headed off to college and completed his undergraduate degree at the University of Maryland in College Park. While at UMD he met his wife, Judy, in 1974, and they've been together ever since. They have two married daughters, who've favored Joe and Judy with four grandchildren. An MBA through Pepperdine University in 1976 led Joe to forty years in human resource management in Roanoke, while Judy taught special education for nearly as long. The Sgrois arrived here in 1977 after spending four years in Key West following their undergrad days. Both are retired now, providing some open time and prompting Joe's Internet search for and joining the RVAS. Long fascinated with outer space, his eyes were opened to the starry sky when overnight camping as a Boy Scout. Fast-forward to December 2020 and the approaching Great Jupiter-Saturn conjunction. He ordered an inexpensive telescope through Amazon, found it wanting and sent it back. Quickly thereafter he ordered a Celestron 8se through B&H Photo in NYC, and is now anxiously awaiting its back-ordered delivery. High on his checklist is whether he'll gravitate to the simple joys of visual observing or astrophotography. Given decades of developing his skill as a photographer, the latter appears poised to win. Along with photography, Joe's an avid golfer and a singer/guitarist who's played with various area bands.

Joe, we were glad to welcome you to our January Zoom meeting as a guest and even more to do so as a member. Your hopes of connecting with and learning from others interested in astronomy are motivators common among your fellow members. Thanks, again, for joining!

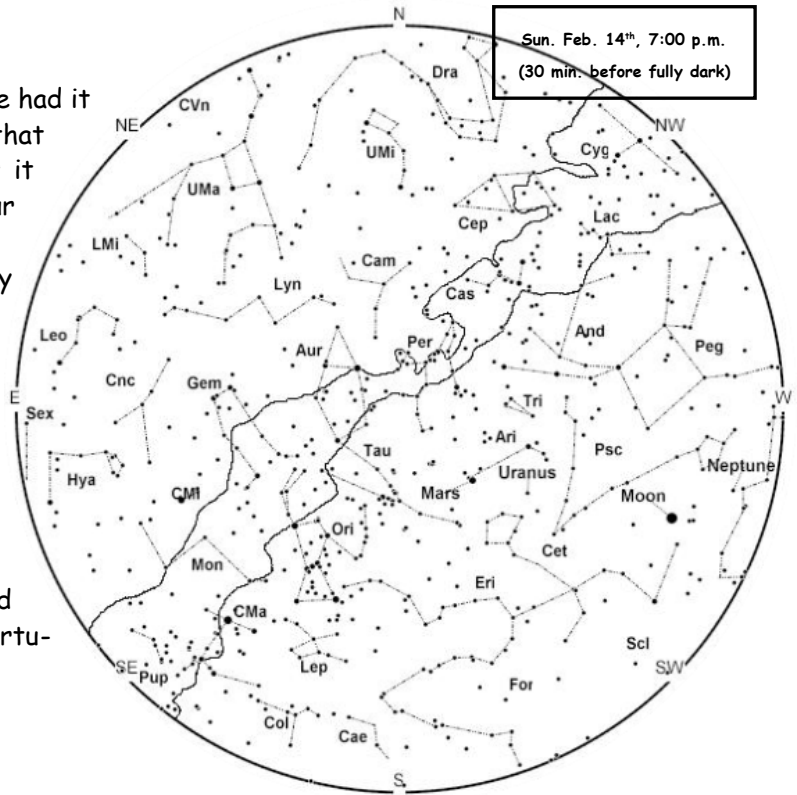
# What's Up Highlights

February 1-28, 2021

A summary of the What's Up program presented at the January 18<sup>th</sup> Zoom meeting.  
The complete PowerPoint is available for viewing by [clicking here](#).

## This Month:

The holidays seem almost just a memory. We've had it with the chill of January. So here comes that "odddity of the annum"—February! Not only is it the shortest month that we toy with every four years, it begins in homage to a rodent that thinks it can forecast the weather! Roughly evenly spaced between the winter solstice and the spring equinox, February 2<sup>nd</sup>'s Groundhog Day is one of the year's four cross-quarter days. Derived from a Pennsylvania Dutch tradition, appropriated by enterprising and tourism conscious folk in Punxsutawney, PA, and likely scaring the bejeebers out of the somnambulant marmot, the creature's forecasting acumen is highly suspect. So, bundle up and check out some of the celestial observing opportunities listed below.



## Celestial Events:

- Tue., 2<sup>nd</sup> - Groundhog Day. (No, we're not talking about the 1993 movie!)
- Wed., 3<sup>rd</sup> - Moon at perigee; distance 58.03 earth radii.
- Wed., 10<sup>th</sup> - Equation of Time at maximum of 14.23 minutes that civil time (clock time) is ahead of solar time.
- Sat., 13<sup>th</sup>, 7:00 p.m. - Binocular Challenge Observation! Use the 2-day-old crescent Moon to find Neptune as dusk deepens. Sweep horizontally 4.5° to the right from the Moon to the 2.2" diameter, mag. 8 planet.
- Thu., 18<sup>th</sup>, 9:00 p.m. - Mag. -10.7 waxing crescent Moon 3.7° SE of mag. 0.8 Mars, with Pleiades about 8° above Mars.
- Thu., 18<sup>th</sup> - Moon at apogee; distance 63.41 earth radii. (9% farther than on 9<sup>th</sup>.)
- Wed., 24<sup>th</sup>, 9:00 p.m. - Waxing Gibbous Moon 2.5° from Beehive Cluster (M44).

## Sunset and Twilight:

Sunset Range: 5:45 p.m. (Feb. 1<sup>st</sup>) to 6:13 p.m. (Feb. 28<sup>th</sup>)

Twilight Ends: 7:14 p.m. (Feb. 1<sup>st</sup>) to 7:40 p.m. (Feb. 28<sup>th</sup>)

## Weekend Observing Opportunities:

Feb. 5<sup>th</sup>/6<sup>th</sup>

## Moon Phases:

Thu., 4<sup>th</sup> - Last Quarter

Thu., 11<sup>th</sup> - New Moon

Fri., 19<sup>th</sup> - First Quarter

Sat., 28<sup>th</sup> - Full Moon

# RVAS from the Past

By Bill Dillon

## RVAS 25 Years Ago

(On February 10<sup>th</sup>, 1996, the IBM supercomputer named Deep Blue defeated Garry Kasparov in chess for the first time.)

And while Deep Blue was deep thinking, the Club was deep in thought as to how to replace Carter's Farm as an observing site. It seems that in January, Frank Baratta drove to Carter's Farm only to find it locked up. Frank was told that folks other than Club members had done some damage on the farm property. Club officers were asking members to help in a search for an alternative site.

There was no problem with obtaining a site for the Club's annual Picnic, as a shelter at the Franklin County Recreational Park had already been reserved for a July 13<sup>th</sup> picnic and star party.

While the Club was set to offer a 360-degree program, *Artic Lights*, at its February business meeting to be held at the "Hopkins Planetarium", Club Officers were scrambling to see if there was any interest in a one day/night excursion to Bays Mountain on March 9<sup>th</sup> as guests of that area's amateur astronomy group. Bays Mountain Park offers a planetarium and natural and space science displays. It's also home to observatories housing 6" and 8" refractors and three reflectors, the largest aperture being 17.5".

## RVAS 10 Years Ago

(On February 24<sup>th</sup>, 2011 Space Shuttle Discovery soared into near-space on mission OV-103; Discovery's 30<sup>th</sup> successful mission, and its last.)

Here on Earth, RVAS was once again producing a Newsletter of unparalleled distinction and professionalism.

Genevieve Goss's lead article encouraged those of us suffering the winter doldrums to try a real or virtual tour of some nearby observatories.

Melissa Enfield writes about how "Life as We Know It is Just One Possibility". Drawing on NASA research, Melissa pulls in the reader by explaining how current space science findings continues to expand the "definition of life".

Michael Good demonstrates his astrophotography prowess in his illustrated article on the Great Nebula in Orion.

Gary Hatfield contributed an article and beautiful photo of Comet Machholz or C/2004 Q2, a comet with two tails.

Jack Gross' article, "Dreams of Stars" presents and explains two of Vincent van Gogh's paintings *Starry Night* and *Starry Night over the Rhone*.

(I could write so much more, but I am out of..... SPACE!)

## RVAS Member Anniversaries

Congratulations to the following members who reach the indicated number of consecutive years with the RVAS since joining or re-joining during the month of February:

Paul and Grainne Caffrey (1999) - 22 years

David Thaler (2000) - 21 years

David and Brenda Urgo (2014) - 7 years

Nancy, Bruce and Amy Vogelaar (2020) - 1 year

Thanks to all of you for being RVAS members!



# A Beneficial Variant: Binoculars for the Solar System Observing Program

By Dan Chrisman

During the January monthly Zoom meeting, **Michael Martin** providing a nice overview of the Astronomical League [AL] Solar System Observing Program [SSOP]. He highlighted his most recent progress with his Uranus observation, his final task to complete the program. Clearly, Michael has enjoyed this observing program.

As a reminder, the program allows a member to choose twenty-five tasks from a list of thirty-four tasks. Each task is an opportunity to observe a Solar System object: Mercury, Venus, Mars, an asteroid, a comet, Jupiter, Saturn, Uranus, Neptune, Pluto, our Moon and our Sun (with a solar filter). These observations will require that one uses unaided eyes and either a pair of binoculars (any size) or a telescope (4" recommended minimum). Upon completion, a member earns the **Solar System Observing Program Certificate and Award Pin**. First awarded in June 1999, one hundred and seventy-two AL members have earned this award as of Dec 2020. Two of those members are our own Genevieve and John Goss.

The Astronomical League has recently altered the genetics of the SSOP to form a Binocular variant. The AL Observing Programs group selected twenty-three of the thirty-four tasks, tagging each with "\*B\*".

To receive the **Binocular Solar System Observing Certificate**, you must complete twenty of the twenty-three "\*B\*" requirements using your eyes or

a pair of binoculars. First awarded in Dec 2017, twenty-two AL members have earned this certificate as of Dec 2020.

And, "if you order now"... er ... if one combines their Binocular Certificate with an additional five more tasks with binoculars or a telescope, then you too qualify for the **Solar System Observing Program Certificate and Award Pin**.

I have completed many of these tasks with both my 11" reflecting telescope and my binoculars. Using two eyes simultaneously continues to exceed my observing expectations, providing me with a better understanding of the capability of binoculars. Clear Skies!



*Award Pin for the Astronomical League Solar System Observing Program.*

## Use Our Message Line!

Want to check whether anyone is getting out on a scheduled observing session night or share that you're planning to do so? Have questions about the club or need its assistance? Call the RVAS Message Line, 540-774-5651, and leave a message or listen for any information available.

# Welcome Mat

The Society bids a warm and cordial welcome to Vincent ("Mark") England, of Fincastle, who joined last month with an Individual membership. Mark is a native son of Botetourt County, while his wife, Kim, is from Charlottesville. They met as students at Radford University when he was proctoring a computer lab and she stopped by for help with using the mainframe. The Englands are the proud parents of recently-wedded Taylor, a Kentucky University nursing graduate. Now semi-retired, Mark's a U.S. Army veteran who worked with Patriot missile systems, including a deployment to Ansbach, Germany. Since leaving the service, he's employed his computer and other skills in a variety of commercial fields, operated his own lawn care service and done heavy haul truck driving, some of which he occasionally still gets calls to do. Since his high school days Mark's had an interest in photography. In the late 1990s, this prompted him to purchase a 4.5" Meade Teles-tar reflector and dabble with imaging star trails. Other pursuits then intervened until about 8 or 9 years ago when Mark bought an 8" Meade LX90 SCT. Then he went on the road driving truck. Recently, with a number of projects completed and time on his hands, he's brought out his equipment again and is renewing his desire to learn astrophotography. At the end of December Mark contacted Ray Bradley for information about joining. Having become a member, he's hoping to benefit from others' knowledge and experience. In fact, he and Ray have already teamed up for a night at the Belk Observatory in Bedford, and Trish Cerulli may be looking at him as a future docent! When not thinking about astronomy, Mark and Kim enjoy hunting together in the fall and riding his motorcycle when the warm days return.

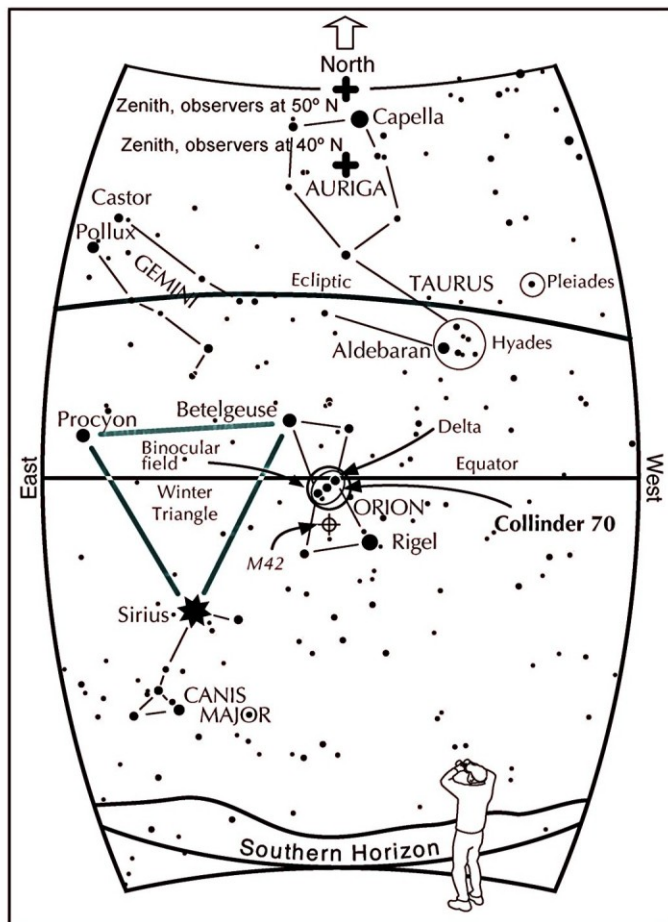
Mark, thanks for joining! We're glad to have you with us—and proud to note that you're our 80<sup>th</sup> member. You'll find a number of experienced and aspiring astrophotographers among your fellow members who'll be glad to assist you develop your knowledge and skills.

## If you can observe only one evening celestial event this month, consider this one:

### Have you ever seen or even heard of the large open star cluster Collinder 70?

Look high in the south around 8 p.m. for the constellation Orion.

- Its three equally bright belt stars shine noticeably between bright Rigel at the southwest corner of the constellation and bright red Betelgeuse at the northeast corner.
- Aim a pair of binoculars directly at the three belt stars.
- From a dark location, you will discover many dimmer lights in the field. Move the binoculars one field around the belt stars, and you will notice a quick drop in the concentration of dim stars.
- You are outlining the cluster of stars known as Collinder 70, lying 1000 light-years from Earth.
- Aim binoculars at Delta Orionis (Mintaka). Can you see its 6.8 mag. secondary star just 1 minute north of its 2.4 mag. primary?





**This article is distributed by NASA Night Sky Network**

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## **Landing On Mars: A Tricky Feat!**

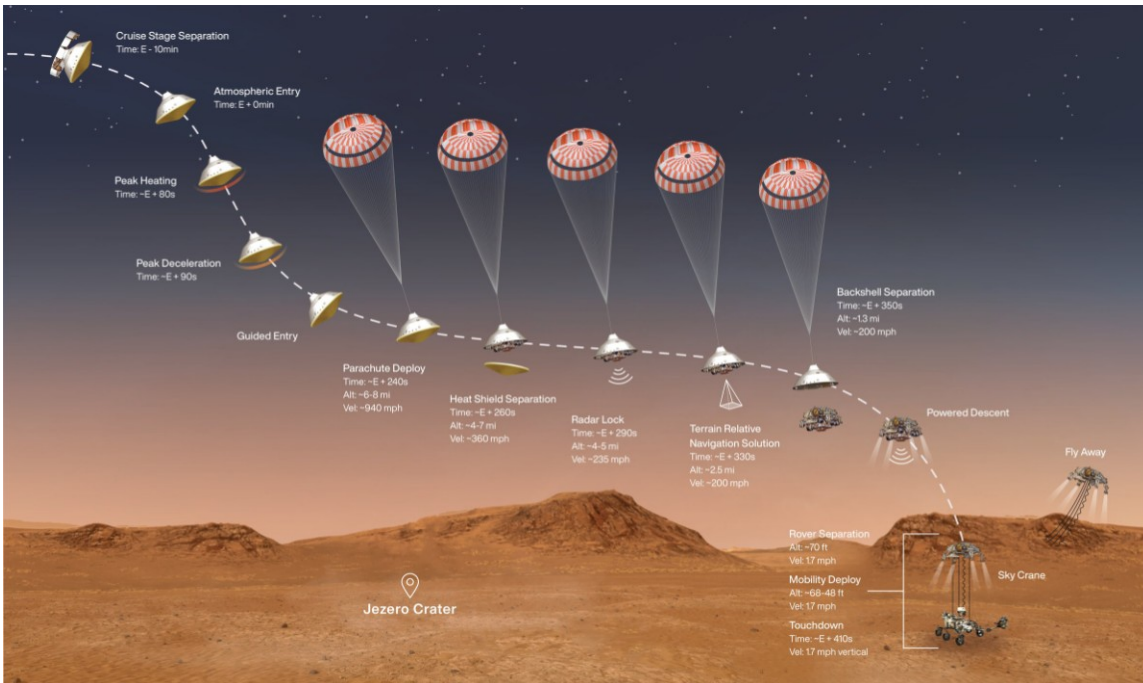
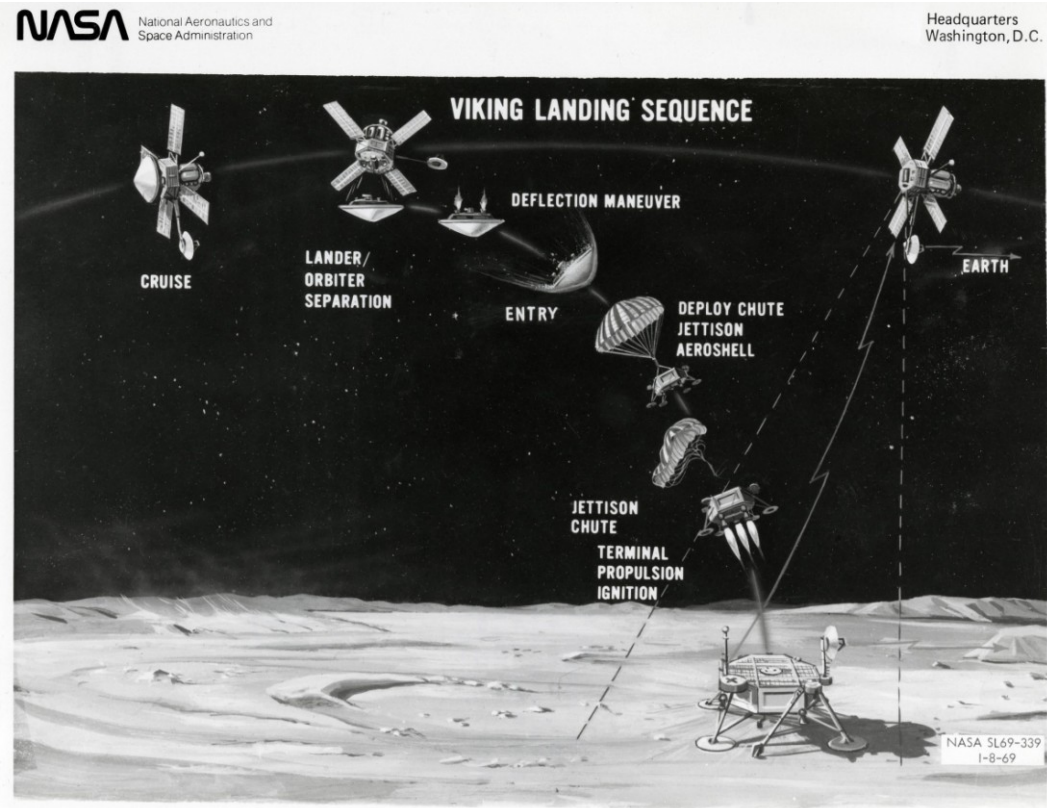
David Prosper

The Perseverance rover and Ingenuity helicopter will land in Mars's Jezero crater on February 18, 2021, NASA's latest mission to explore the red planet. Landing on Mars is an incredibly difficult feat that has challenged engineers for decades: while missions like Curiosity have succeeded, its surface is littered with the wreckage of many failures as well. Why is landing on Mars so difficult?

Mars presents a unique problem to potential landers as it possesses a relatively large mass and a thin, but not insubstantial, atmosphere. The atmosphere is thick enough that spacecraft are stuffed inside a streamlined aeroshell sporting a protective heat shield to prevent burning up upon entry - but that same atmosphere is not thick enough to rely on parachutes alone for a safe landing, since they can't catch sufficient air to slow down quickly enough. This is even worse for larger explorers like Perseverance, weighing in at 2,260 lbs (1,025 kg). Fortunately, engineers have crafted some ingenious landing methods over the decades to allow their spacecraft to survive what is called *Entry, Descent, and Landing (EDL)*.

The Viking landers touched down on Mars in 1976 using heat shields, parachutes, and retrorockets. Despite using large parachutes, the large Viking landers fired retrorockets at the end to land at a safe speed. This complex combination has been followed by almost every mission since, but subsequent missions have innovated in the landing segment. The 1997 Mars Pathfinder mission added airbags in conjunction with parachutes and retrorockets to safely bounce its way to a landing on the Martian surface. Then three sturdy "petals" ensured the lander was pushed into an upright position after landing on an ancient floodplain. The Opportunity and Spirit missions used a very similar method to place their rovers on the Martian surface in 2004. Phoenix (2008) and Insight (2018) actually utilized Viking-style landings. The large and heavy Curiosity rover required extra power at the end to safely land the car-sized rover, and so the daring "Sky Crane" deployment system was successfully used in 2012. After an initial descent using a massive heat shield and parachute, powerful retrorockets finished slowing down the spacecraft to about 2 miles per hour. The Sky Crane then safely lowered the rover down to the Martian surface using a strong cable. Its job done, the Sky Crane then flew off and crash-landed a safe distance away. Having proved the efficacy of the Sky Crane system, NASA will use this same method to attempt a safe landing for Perseverance this month!

You can watch coverage of the Mars Perseverance landing starting at 11:00 AM PST (2:00 PM EST) on February 18 at [nasa.gov/nasalive](https://nasa.gov/nasalive). Touchdown is expected around 12:55 PM PST (3:55 PM EST). NASA has great resources about the Perseverance Rover and accompanying Ingenuity helicopter on [mars.nasa.gov/mars2020](https://mars.nasa.gov/mars2020). And of course, find out how we plan to land on many different worlds at [nasa.gov](https://nasa.gov).



*Illustrations of the Entry, Descent, and Landing (EDL) sequences for Viking in 1976, and Perseverance in 2021. Despite the wide gap between these missions in terms of technology, they both performed their landing maneuvers automatically, since our planets are too far apart to allow Earth-based engineers to control them in real time! (NASA/JPL/Caltech)*

**MEMBER OBSERVING REPORT**

# Renewed Enthusiasm!

By Harry Montoro

Inspired by the December Zoom meeting door prize give away, I decided to purchase a Gosky cell phone adapter mount and experiment with taking photos through the eye piece of my telescope using my Samsung Galaxy S10. I also purchased a zoom eyepiece to try out. I bought the Svbony 7mm to 21mm zoom eyepiece to try. I purchased both items from Amazon paying about \$55.00 for the eyepiece and \$17 for the mount.

I received the items around the 9<sup>th</sup> of January 2021 and was afforded several days and evenings of reasonably clear skies over the subsequent two weeks. As I mentioned during the December meeting, prior to reading my sun based limerick, I enjoy solar observing. Thus the first item on my list was to view our closest star. On the 10<sup>th</sup> of January, I used my classic orange Celestron 8" SCT equipped with a Thousand Oaks full aperture solar filter for viewing the sun. I also used a focal reducer to change from f/10 to f/6.3. Along with a 40mm Plossl eyepiece having an apparent FOV of 52 deg I obtained a field of view in the eyepiece of about 1.6 degrees at a magnification of about 32X. Since the sun is roughly one half degree in diameter as seen from the earth, it made for a good setup to test out the camera and mount. I was out for most of the afternoon looking at the sun but it was quite uniform with no observable sunspots. Several days later I was able to observe several small sun spots.



*The Sun on January 10, 2021*

*Photo by Author*

higher in the sky each night following sunset, both Saturn and Jupiter continued to set earlier. On one night I was able to spot both Mercury and Jupiter but never Saturn. Looking towards the horizon at sunset through the atmosphere does not provide the best seeing. Nevertheless, I was pleased to be able to observe both of these planets and obtain a few photos though nothing particularly noteworthy. I couldn't help thinking how nice it would have been to have had this setup on the night of December 22<sup>nd</sup> 2020 when the Jupiter - Saturn conjunction was at about .8 degree separation and the sky was clear. I did observe that evening, but had no way to take photos then.

I also used the Svbony zoom eyepiece extensively. I was pleased with its performance given it is relatively inexpensive for a zoom eyepiece. This eyepiece claims an apparent field of view of 40 degrees at 21mm and 57 degrees at 7mm which translates to actual fields of views ranging from .312 degrees (18' 42") at 183X magnification to .656 degrees (39' 22") at 61X magnification. I also played

*(Enthusiasm Continued on page 14)*



*Sunspots on Jan. 20, 2021*

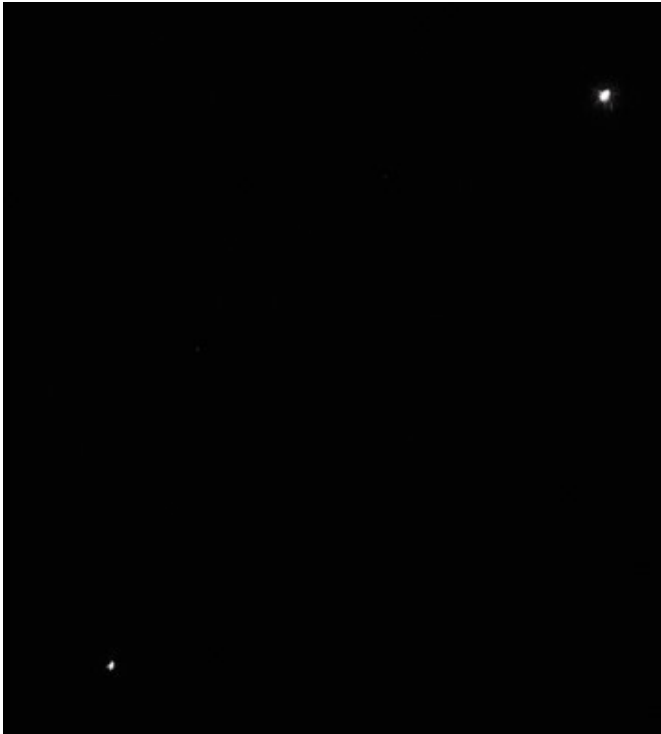
*Photo by Author*

In addition to the sun, the triple conjunction of Mercury, Jupiter, and Saturn was of interest to me on the evening of January 10<sup>th</sup>. Unfortunately as it turned out, I did not have a low enough horizon and could only spot Jupiter just above the distant tree tops but could not spot either Mercury or Saturn that evening. I continued to observe over the next several evenings and while Mercury rose

(Enthusiasm Continued from page 13)

uniquely interesting observation of the Mars - Uranus conjunction on the evening of January 21<sup>st</sup>. 2021. Since I had never before viewed Uranus through a telescope, I was pleased to be able to do so for the first time. And since they were only about 1.3 degrees apart, I was able to capture both of them in the same image!

I have not in any way perfected taking photos with my setup. There is much I need to learn to reduce vibrations and improve overall image clarity. I also need to keep better records of the configurations and settings used for documentation purposes. Still, to be able to capture some of the views of the heavens with my new set up has very much renewed my enthusiasm for astronomical observation.



Mars (top right) and Uranus on Jan. 21, 2021

Photo by Author

with the camera settings on the Samsung Galaxy S10 to apply digital zoom prior to and after taking photos. The Galaxy S10 will also allow for timed exposures and to set delay times on the "shutter" so that it "snaps" the photo several seconds after touching the phone, which helps to reduce vibrations.

Over the next several days and nights I continued to observe and take photos of the sun, the moon, Mercury, Mars, Orion Nebulae, Pleiades, and a



The Moon  
on January  
19, 2021

Photo by  
Author

## Wanted

Astro photos by members for display on the RVAS web site. Send to [editor@rvasclub.org](mailto:editor@rvasclub.org)

Observing reports or articles from members about astronomy activities in which they may be involved

E-mail any material you would like to submit for publication to: [editor@rvasclub.org](mailto:editor@rvasclub.org)

# Monthly Calendar

**MONTHLY ZOOM MEETING: Monday, February 15<sup>th</sup>, 7:30 p.m.** Our Zoom meetings continue this month with an interesting and informative feature program by Ray Bradley on the Mars 2020 Mission. The spacecraft is scheduled to arrive at the Red Planet on February 18<sup>th</sup> and deposit the Perseverance Rover on the surface. Tops among mission tasks are seeking signs of ancient life and collecting samples of rock and regolith for possible return to Earth. Perseverance also carries the Ingenuity Helicopter, a separate technology demonstration. Also on tap is our regular sky review for the coming month from Frank Baratta. And, along with calling for observing and other reports, RVAS President John Goss will inform everyone about the Executive Committee's latest actions regarding tax exemption for the Society. In addition, John will address our not-too-distant election of officers and offer a glimpse at a piece of equipment whose capabilities just can't be believed—and shouldn't be! Mark your Calendar for the meeting date and time, and watch for your invitation!

**WEEKEND OBSERVING OPPORTUNITIES:** During the continuing COVID-19 health emergency, the following information on Fridays and Saturdays that may be suitable for observing is provided solely as a courtesy to RVAS members and other readers. The RVAS assumes no responsibility for the health and safety of anyone venturing out to stargaze, and cautions all doing so to observe social distancing and other health and safety precautions.

-- **Friday and Saturday, February 5<sup>th</sup> and 6<sup>th</sup>.** Sunset is at 5:50 p.m. Astronomical twilight ends at 7:19 p.m. The Moon sets at 12:08 and 12:51 p.m., respectively.

-- **Friday and Saturday, February 12<sup>th</sup> and 13<sup>th</sup>.** Sunset is at 5:58 p.m. Astronomical twilight ends at 7:25 p.m. The Moon sets at 6:57 and 7:58 p.m., respectively.

-- **Future Weekend Observing Opportunities:** March 5<sup>th</sup> and 6<sup>th</sup>; 12<sup>th</sup> and 13<sup>th</sup>.

**ROANOKE CITY PARKS and RECREATION PUBLIC STARGAZE:** The first quarterly session for 2021, scheduled for Saturday, February 6<sup>th</sup>, has been canceled. The next session is to be held on May 8<sup>th</sup>, 6:45 p.m. at Cahas Knob Overlook, milepost 139 on the Blue Ridge Parkway, pending a decision nearer that date as to whether safe viewing can be provided. For information/registration, contact the Department at 540-853-2236. Registration's not required for RVAS members, but recommended in order to receive any cancellation notice.

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## Astro-Quiz

Roanoke's latitude is N 37° 16' 15.6", so the declination of Roanoke's zenith—the point directly overhead—is +37° 16' 15.6". The brilliant star Vega (a Lyrae), magnitude 0.03, passes 1.8° from our zenith. Do any other stars brighter than magnitude 3.0 come closer? If so, name them! ([Here's a hint!](#))

**Answer to Last Month's Quiz:** The design of an eyepiece determines its "apparent field of view (AFOV)," the angular sweep visible through it alone, which manufacturers specify. AFOVs range from 40° to over 100°. But when paired with a telescope, the "true field of view (TFOV)" is only a small fraction of the AFOV. Knowing the TFOV your eyepieces provide for the telescope(s) you have can help with navigating the sky. Last month we asked what two additional specifications must be known to determine the TFOV seen with an eyepiece through a telescope? In addition to each eyepiece's AFOV you'll need to know its focal length ( $f_e$ ) and the focal length of the telescope ( $F_T$ ). The formula is  $TFOV = (AFOV \times f_e) / F_T$ . For example, a reflector with an 1143mm focal length ( $F_T$ ) paired with a 26mm ( $f_e$ ) eyepiece with a 50° AFOV yields a 1.1° TFOV; i.e.  $(50 \times 26) / 1143$ . Kudos to Harry Montoro for correctly answering the quiz! Have an answer to this month's quiz (or a future question and answer to suggest)? E-mail it to [astroquiz@rvasclub.org](mailto:astroquiz@rvasclub.org)!